

WHAT IS CLAIMED IS:

1. A parking assist apparatus comprising:
 - a display device that displays an actual image of surroundings of the vehicle;
 - a setting device which displays a setting display that indicates a target parking position of the vehicle on the actual image of the display device, and which sets the target parking position of the vehicle in accordance with a positioning operation of the setting display; and
 - an operation aid device that aids in the positioning operation of the setting display in a direction to a parking-possible region when the target parking position is to be set by the setting device.
2. The parking assist apparatus according to claim 1, wherein:
 - the setting device calculates a path to the target parking position; and
 - the operation aid device aids in the positioning operation of the setting display in the direction to the parking-possible region when the target parking position is to be reset after it is determined that parking the vehicle in the target parking position is difficult through calculation of the path to the target parking position set by the setting device.
3. The parking assist apparatus according to claim 2, wherein the setting device performs the calculation of the path at every predetermined time.
4. The parking assist apparatus according to claim 2, wherein the setting device performs the calculation of the path every time the target parking position is changed by the positioning operation of the setting display.
5. The parking assist apparatus according to claim 2, wherein the setting device has a switch for starting the calculation of the path.
6. The parking assist apparatus according to claim 1, wherein the operation aid device makes effective only a function of an operating switch of moving the position of the setting display in the direction to the parking-possible region, the operating switch being operated by a vehicle driver to move the position of the setting display.

7. The parking assist apparatus according to claim 1 wherein:

a plurality of operating switches that are operated by the vehicle driver to move the position of the setting display are displayed in a display screen corresponding to directions in which the position of the setting display is moved; and

among the plurality of operating switches, at least one operating switch for moving the position of the setting display in the direction to the parking-possible region is displayed by the operation aid device with a more emphasis than at least one operating switch for moving the position of the setting display in a direction to a parking-impossible region.

8. The parking assist apparatus according to claim 7, wherein the operation aid device displays, on the actual image, the at least one operating switch for moving the position of the setting display in the direction to the parking-possible region in a first color, and the at least one operating switch for moving the position of the setting display in the direction to the parking-impossible region in a second color that is different from the first color.

9. The parking assist apparatus according to claim 8, wherein the operation aid device disables an operation of the at least one operating switch for moving the position of the setting display in the direction to the parking-impossible region.

10. The parking assist apparatus according to claim 9, wherein the operation aid device makes effective the disabled operation of the at least one operating switch after the position of the setting display is moved to a parking-possible position.

11. The parking assist apparatus according to claim 7, wherein the operation aid device erases the at least one operating switch for moving the position of the setting display in the direction to the parking-impossible region from the actual image.

12. The parking assist apparatus according to claim 1, wherein the operation aid device superimposes a synthesized image for discriminating the parking-possible region and a parking-impossible region, on the actual image.

13. The parking assist apparatus according to claim 12, wherein the operation aid

device displays, on the actual image, an expected locus of an inner turning wheel which is expected to occur if the vehicle is moved with a maximum steering angle of the vehicle.

14. The parking assist apparatus according to claim 12, wherein the operation aid device displays the parking-possible region and the parking-impossible region in different colors.

15. The parking assist apparatus according to claim 1, wherein if it is determined that it is difficult to park the vehicle in the target parking position set by the setting device, the operation aid device outputs explanatory information that aids in the positioning operation of the setting display in the direction to the parking-possible region in accordance with the set target parking position.

16. The parking assist apparatus according to claim 15, wherein if it is determined that it is difficult to park the vehicle in the target parking position set by the setting device, the operation aid device indicates to a vehicle driver at least one of i) reason why it is difficult to park the vehicle in the target parking position, and ii) an operation of the setting display for setting the target parking position at a parking-possible position.

17. The parking assist apparatus according to claim 1, wherein the operation aid device displays the setting display in a third color if it is determined that it is difficult to park the vehicle in the target parking position, and displays the setting display in a fourth color that is different from the third color if it is determined that it is possible to park the vehicle in the target parking position.

18. The parking assist apparatus according to claim 1, wherein the setting display includes a parking space frame that is displayed on the actual image.

19. A parking assist apparatus comprising:

display means for displaying an actual image of surroundings of the vehicle;

setting means for displaying a setting display that indicates a target parking position of the vehicle on the actual image of the display means, and setting the target parking position of the vehicle in accordance with a positioning operation of the setting display; and

operation aid means for aiding in the positioning operation of the setting display in a direction to a parking-possible region when the target parking position is to be set by the setting means.

20. A parking assist method comprising:

a first step of displaying an actual image of surroundings of the vehicle;

a second step of setting a target parking position where the vehicle is to be parked in accordance with a positioning operation of a setting display shown on the actual image of surroundings of the vehicle; and

a third step of aiding in the positioning operation of the setting display in a direction to a parking-possible region when the target parking position is to be set.